JAFFE EXHIBIT 83

UNITED STATES DISTRICT COURT
NORTHERN DISTRICT OF CALIFORNIA
SAN FRANCISCO DIVISION

WAYMO LLC, Plaintiff,	)	
vs.	)	Case No. 3:17-cv-00939-WHA
UBER TECHNOLOGIES, INC., OTTOMOTTO LLC; OTTO TRUCKING LLC, Defendants.	)	

*** CONFIDENTIAL - ATTORNEYS' EYES ONLY ***

VIDEOTAPED DEPOSITION OF PAUL McMANAMON
San Francisco, California
Wednesday, April 19, 2017
Volume I

Reported by:
CARLA SOARES
CSR No. 5908
Job No. 2598912

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taking out all of them. 10:19:56

Q Okay.

A They're relatively similar.

Q Did you do any measurements during this inspection? 10:20:01

A I did not.

Q You did not look at any Waymo LiDAR devices in person, correct?

A As far as I understood my task, my task was to compare the Uber Fuji system against claimed 10:20:14 trade secrets by Google and patents by Google, or Waymo -- sorry, I should have said "Waymo" -- and so I didn't feel it was really necessary to examine any particular devices that Google or Waymo had built.

Q You understand that Waymo developed those 10:20:37 patents and trade secrets while it was building its LiDAR devices, correct?

A Yes.

Q But you didn't think it was necessary to look at the actual devices as part of your analysis? 10:20:44

A The task, as I understand it, is to see whether there was any infringement of the patents or any use of the trade secrets. And so that was the task that I attempted.

Q And your list of materials considered, 10:21:10

things to align. 10:28:48

Q Did Mr. Haslim explain how Uber does the alignment --

A He did not.

Q -- when it's testing its devices? 10:28:54

A Sorry. I didn't wait for you to finish.

Mr. Haslim did not go into detail on the alignment procedures. That actually would have been an interesting thing to go into, but we did not go into that detail. 10:29:08

Q So why don't we turn to paragraph 33 of your declaration.

A Here we go.

Q Paragraph 33 continues on to the next page. 10:29:35

A Yes.

Q But it's fair to say this has a comparison of Waymo's GBr3 LiDAR device with Uber's Fuji LiDAR device?

A Let me read it, see what I said. 10:29:44

In this paragraph, I do compare the devices because of the fact that I was trying to determine whether the trade secrets and the patents claimed by Waymo were used in the Uber device.

Q And on page 7, line 27, you say that the 10:30:15

following chart provides a summary comparison of key features of those devices? 10:30:22

A Yes, I do.

Q And that summary chart does not include a specific comparison of the individual transmit printed circuit boards in the two devices, correct? 10:30:33

A The boards -- the details of the boards I felt were more in Mike Lebby's tasking than they were in my tasking, and so I wasn't focusing on those. 10:30:51

Q Same answer with respect to the position of the laser diodes on the boards?

A Yes, same answer.

Q One thing you point out in -- I'm looking at paragraph 36, if you want to reference it. 10:31:03

One thing you point out is that the Fuji system has two optical cavities?

A Yes.

Q Do you know if those two cavities are synchronized in any way? 10:31:12

A I'm not sure, but I seem to remember that they -- one of the benefits of having two cavities was they felt they could fire a laser from one cavity and fire a laser from the other cavity, and they wouldn't interfere. 10:31:33

details of these designs. 10:39:38

Q So you agree, it's not your opinion that he had that design in Exhibit 68 in October 2015?

A I don't know exactly when this particular design was developed. He may have told me, but I 10:39:49 don't know exactly when it was developed.

Q Okay. The design -- just for the record, the design in Exhibit 68 is what --

A Yes. I don't remember exactly when it was developed. 10:40:01

Q Okay.

A I do know that he had the [redacted] concept. But when these exact details, [redacted] I don't know exactly when that happened. 10:40:08

Q Okay. And so back to your declaration, paragraph 43, and fortunately we have a picture of it here in your declaration.

A Okay.

Q This is, I believe -- 10:40:19

A Yes.

Q -- a [redacted] from a RFQ that --

A Correct.

Q -- Mr. Boehmke sent to Velodyne? 10:40:26

A Yes. 10:40:28

Q And this -- you agree with me that this

[redacted] --

A I'd have to [redacted] on

here. Wait a minute. 10:40:45

There are [redacted].

Q Okay. And you consider this [redacted]

[redacted]

A I do consider this [redacted]. Yes.

It's a foveated vision type of concept. 10:40:58

Q Okay. That was my next question.

You consider it foveated vision?

A Yes.

Q Do you agree with me that at least as far

as you can tell on this diagram, [redacted] 10:41:09

[redacted]

A They appear to be [redacted] as I

look at them.

Q Okay. Do you agree with me that the

[redacted] in paragraph 43 of your 10:41:28

declaration is not the same as [redacted] in

Exhibit 68 that I've put in front of you?

A The main point of this figure is the

concept. And if you look at the right of that

figure, you'll even see it says, [redacted] 10:41:44

Q Correct me if I'm wrong, but I believe your declaration does not analyze or does not provide a description of what Mr. Boehmke was doing between March 2016 and late October 2016. Is that fair? 10:43:02 10:43:13

A I believe that's fair. Yes.

Q You understand that Mr. Haslim, in his declaration, he said that the work on Fuji began in late October 2016.

Does that sound right? 10:43:28

A That sounds approximately right.

Q Okay. So there wasn't a specific Fuji design prior to late October 2016 as far as you know?

A I don't -- I don't know exactly when the Fuji design came into fruition. 10:43:37

Q And then paragraph 48 of your declaration, one thing you say is that -- and I'm looking at the last sentence. You say, "The [redacted] [redacted] of the Fuji design are based on Mr. Boehmke's work on [redacted]" 10:43:58

Do you see that?

A I do.

Q And I just want to make sure I'm clear. 10:44:09

You don't provide a specific analysis to support that statement in your declaration? 10:44:12

A As I stated a few times, I believe the important thing is that he developed the concept of [redacted]. And then they used that in order to meet the requirements that they set for the LiDAR. 10:44:23

Q Okay. I just want to make sure I'm clear.

You didn't do the analysis to show that what he conceived of, his version of [redacted], was actually implemented into the Fuji design; that's not an analysis you provided in your declaration? 10:44:35

A I believe his [redacted] probably changed over time. 10:44:52

So looking at the earlier [redacted] that he had might not be as productive, other than learning the concept, because I believe it did evolve, you know, as they looked at their requirements in more detail. 10:45:08

Q And at any point in time, you didn't compare Mr. Boehmke's specific work -- your declaration doesn't compare his specific work to what ultimately ended up in Exhibit 68? 10:45:22

A I did not end up analyzing any of the particular exact earlier ones and compare it with the final one that they ended up -- you know, well, the final as of now. 10:45:27

Q Okay. Jumping up a little bit, paragraph 46 of your declaration -- 10:45:39

A Okay.

Q -- you said that Mr. Boehmke developed his designs prior to Uber's acquisition of Otto in August of 2016. 10:45:51

Do you see that?

A I do see that.

Q At the time you wrote your declaration, was it your understanding that Mr. Boehmke was working independently of Otto? 10:45:58

A That is my understanding.

Q Would it surprise you if Mr. Boehmke was communicating with Anthony Levandowski about beam spacing prior to August of 2016?

A I have no knowledge of that. 10:46:13

Q Do you understand who Mr. Levandowski is?

A I've read about him in the newspaper. Well, actually online.

Q Okay.

A I used to read newspapers. 10:46:21

A I believe that there are a number of trade secrets Google claims -- Waymo claims. 10:50:52

Q So you can't tell me just sitting right here whether the trade secrets are specifically limited to the concept of [redacted] 10:51:02

[redacted] or whether they're more specific?

A Why don't we add to the list of things you'll get at the break the trade secret list --

Q Of course. 10:51:12

A -- so that I can look at the trade secrets.

Q But you offered a declaration on these trade secrets, correct?

A Yes, I did. 10:51:17

Q And sitting here right now, having done the analysis, I'm just asking if you can tell me whether the trade secrets are specifically limited to the concept of [redacted]

[redacted] 10:51:26

A The main issue I would have with the other trade secrets is the fact that since Uber independently developed their LiDAR, then I believe the exact details of these trade secrets are not that relevant. That's just my understanding of what 10:51:43

a trade secret is. 10:51:45

Q Okay. Do you agree with me that the trade secrets are not simply the concept of [redacted]?

A I believe that Waymo is claiming more trade secrets than just that. 10:52:02

Q Is it your understanding that one of the trade secrets is specifically limited to the concept of [redacted]?

A I don't remember the exact wording of that trade secret. But I believe the main point was claiming foveated vision as a trade secret, which I disagree with. 10:52:17

Q Do you recall seeing the words [redacted] in Waymo's trade secret list? 10:52:27

A I believe that Waymo/Google probably was -- they did not use that. They did not use that.

Q And you looked at the declaration from some Waymo engineers, correct? 10:52:39

A I looked at one from Droz who did the design. Yes.

Q And Mr. Droz didn't say that that was their -- their design was to simply implement [redacted], correct? 10:52:53

A He did not use the words [redacted] 10:52:55

[redacted] I'm the one who started to use the words

[redacted]

Q Foveated vision typically refers to [redacted]

[redacted] 10:53:05

[redacted]

[redacted] is that fair?

A I might characterize it somewhat different than that.

I would say [redacted] 10:53:15

[redacted]

Q Okay. Did you cite any documents that specifically have that definition in it in your declaration?

A I don't remember -- I mean, I cited two 10:53:32 documents in my declaration that used [redacted]

[redacted] and there's been many, many documents that -- some of which I reference in -- you know, that I looked at on [redacted]

Now I've forgotten exactly what the 10:53:50 question is.

Q No problem. We can go to the next question.

A Okay.

Q You mentioned two specific papers. One of 10:53:57

those is the PanDAR publication? 10:53:58

A Yes, it is.

Q I'll refer you to paragraph 52 of your declaration.

A Okay. 10:54:05

Q I believe this is where you have discussion of the PanDAR device.

A Yes.

Q Were you involved in the development of the PanDAR device at all? 10:54:13

A No, I was not. I knew a lot of people at HRL, but I didn't know these particular people that published this.

Q HRL, is that a research lab?

A It is. It used to be Hughes Research Laboratory, but now it just and stands for HRL because Hughes doesn't exist anymore. 10:54:23

Q This PanDAR paper was published in 2015?

A I believe you are correct.

Q Do you agree this describes the state of the art in 2015 for certain autonomous vehicle LiDAR systems? 10:54:38

A I don't know that. I guess I'm not -- this is -- they had a couple of points in this paper that they wanted to make. 10:54:55

So I guess I would not characterize this as necessarily describing the state of the art. They were using commercial -- commercially available LiDARs. They were overlapping them in order to have a foveal region. 10:54:58 10:55:10

But I believe it would be a step too far to compare this to the state of the art. They were using whatever devices they needed in order to make the scientific points they needed to make in this paper. 10:55:26

Q Okay. And the device that's described in the PanDAR paper mounted to Velodyne 32E LiDAR devices on top of each other, correct?

A Yes, that is correct.

Q And is it correct that the bottom one was flipped upside down? 10:55:36

A Yes. One of them was.

Q One of them was flipped upside down.

And you actually have -- in paragraph 52, you've got a couple figures from the PanDAR paper. 10:55:46

Do you see that?

A Yes, I do.

Q And this figure shows that the PanDAR device overlaps 16 of the lasers from each of the two devices in the middle of the field of view, 10:56:00

correct? 10:56:02

A Yes, it does.

Q Does the figure show a 60-degree vertical field of view?

A Yes, it does. 10:56:08

Q The top 20 degrees has 16 lasers, correct?

A Yes.

Q And that's identified as the periphery?

A Correct.

Q And the lower 20 degrees also has 16 lasers? 10:56:17

A Yes, it does.

Q That's also identified as the periphery?

A Yes, it is.

Q Then the middle 20 degrees has 32 lasers resulting from the overlap, correct? 10:56:24

A Yes, that is true.

Q And that's identified as the fovea?

A Yes.

Q And the Velodyne 32E devices, they each have 32 uniformly spaced lasers, correct? 10:56:33

A Those were commercially available devices that they used. And yes, those devices were uniformly spaced.

Q Okay. So the PanDAR device implemented 10:56:46

foveated vision without using [redacted] 10:56:48

[redacted], correct?

A They -- they used two commercially available devices that had uniform spacing and overlapped them as their method of implementing 10:56:59 foveated vision.

Q So you agree that the LiDAR system can implement foveated vision without using [redacted]

A Well, in this case, it's really using, I 10:57:07 guess, two separate LiDARs and overlapping them.

Q But it's not using [redacted]?

A In this case, it is not.

Q Do you recall that Uber also attempted a 10:57:20 design that had two Velodyne sensors stacked on top of each other?

A I remember some discussion about that, and they might have even asked Velodyne about delivering two of them. My recollection of that is not that 10:57:33 clear.

Q Okay. Do you recall this being referred to as the dual-stack design?

A I've heard those words.

Q Okay. Am I correct that Uber did not 10:57:42

choose to go with that design, they went with the Fuji design? 10:57:48

A Yes, that is correct. Yes.

MR. NEWTON: I think we're right at about an hour, so why don't we take a break. 10:57:56

THE WITNESS: That sounds like a good plan.

THE VIDEO OPERATOR: This marks the end of Media No. 1 in the deposition of Dr. Paul McManamon. We're going off the record at 10:58 a.m. 10:58:04

(Recess, 10:58 a.m. - 11:15 a.m.)

THE VIDEO OPERATOR: We're back on the record at 11:15 a.m., and this marks the beginning of Media No. 2 in the deposition of Dr. Paul McManamon. 11:15:05

BY MR. NEWTON:

Q Dr. McManamon, welcome back.

A Thank you.

Q So I'd now like to talk about paragraph 54 of your declaration. 11:15:13

A Okay. I'll be there in a minute. Okay.

Q And this paragraph discusses the Velodyne U.S. Patent No. 8,767,190?

A Yes.

Q And you point out here that the patent 11:15:29

claims priority to a provisional application filed in 2006? 11:15:31

A Yes, I do.

Q Did you analyze whether that provisional application provides support for the '190 patent itself? 11:15:38

A No, I did not.

Q Figure 5 of the '190 patent shows a 32 laser LiDAR device; is that fair?

A Sort of. It actually shows the 32 detector side. They're exactly equivalent, but it's showing the detector side. 11:16:01

Q Right. I should have clarified.

What Figure 5 shows is the detectors. There's 32 corresponding lasers in the system described in the '190 patent? 11:16:15

A Yes, there are.

Q And each of the laser diodes is mounted on its own PCB?

A Yes, it is. 11:16:30

Q And you annotated Figure 5, I believe, in paragraph 55 of your declaration to actually show the laser diodes or where the laser diodes would be?

A Yeah. If it was the laser diode side, that would be where the laser diodes would be. 11:16:48

Q And that's an accurate depiction, in your opinion? 11:16:50

A I believe it is, yes.

Q And in paragraph 56 below that, you quote part of the '190 patent that says, "The density of the emitter/detector pairs populated along the vertical FOV is intentionally variable," correct? 11:17:03

A Yes.

Q And you don't cite any disclosure from the '190 patent that shows a specific variable density pattern, correct? 11:17:19

A That is correct.

Q And you also quote part of the patent that says you can reduce the number of emitters and detectors by removing or not installing a desired number of emitter/detector pairs? 11:17:34

A Yes, that is true.

Q And same question. There's not a specific disclosure in the '190 patent that says exactly which emitter/detector pairs to not install or to disable? 11:17:49

A In both cases, they were speaking generally about the concept of [redacted] and then the concept of removing devices. So in that sense, I think they covered all possible 11:18:04

implementations. 11:18:06

Q Okay. And there's a lot of possible implementations?

A There are. There's a lot of possible implementations. 11:18:11

Q And you provided, in paragraph 57, what you describe as an example of [redacted] of diodes achievable in the system of the '190 patent.

A Yes, and that's just one possible example. Yes. 11:18:30

Q Out of the many that are possible?

A Out of the many that you could decide.

Q And just so the record is clear, the annotation you have in Figure 5, that's your annotation? 11:18:41

A Yes, it is. The second -- both the first and second annotation.

Q Okay. And the one in paragraph 57, the different laser diodes that you removed, that's not based on a specific teaching from the patent that 11:18:55 says remove this emitter pair or not install this emitter pair, correct?

A It's encompassed in -- any particular ones you remove are encompassed, but they did not teach any specific diodes being removed. 11:19:07

The other thing, though, that you should look at in that patent is the fact that they do say that it could be 64 or more. 11:20:22

Q Sure.

And I just want to compare the two annotations, though, that you provide in your declaration. That's what I'm focused on -- 11:20:29

A Right.

Q -- is what you said in your declaration.

And you agree with me that the first annotation you provide in paragraph 55 is going to [redacted] than the second annotation you provided in paragraph 57? 11:20:37

A I think the more interesting thing is the fact that [redacted] 11:20:54

So you're focusing -- it's a [redacted] 11:21:09

Q Okay. But I'm interested in the resolution overall.

You agree with me that the first annotation you provided in paragraph 55 will have [redacted] 11:21:18

[redacted] 11:21:20

A I guess your use of the term "resolution" there to me confuses me. [redacted]

[redacted] 11:21:32

[redacted]

Now, [redacted]

[redacted]

[redacted] 11:21:44

[redacted]

[redacted]

[redacted] --

Q Okay.

A -- as they state in the patent. 11:21:57

Q So you're not willing to say that these two figures have -- that one has [redacted]

[redacted]?

A I think your use of the term "resolution" there is inappropriate. 11:22:09

Q I'm asking about your understanding of resolution. If you talk about the resolution of a LiDAR device --

A The resolution --

Q Just let me finish my question. 11:22:17

A Sorry. I do that. 11:22:18

Q I'll start over.

A Okay.

Q If we're talking about the overall resolution of a LiDAR device, would you agree with 11:22:22
me that using -- and I want to use your understanding of "resolution" -- would you agree with me that [redacted] 11:22:36
[redacted]?

A Actually, I wouldn't agree with you.

Q Okay.

A The reason I wouldn't agree with you is because the [redacted] 11:22:43
[redacted].

So if you [redacted] 11:22:58
[redacted] And that's why your use of the term "resolution" to me is awkward here.

Q Okay. So I'll use the language of the patent. And the patent says when you remove or you decide not to install certain emitter/detector 11:23:11

pairs, you cut down on the number of vertical lines that the sensor produces, correct? 11:23:15

A In that region, yes, you do. That I agree with.

Q Okay. So do you agree with me that according to the patent, if you go from what you [redacted] 11:23:23

A Yes, [redacted]. 11:23:37

Q And the patent says when you remove or you decide not to install certain laser diodes, you do that to cut down on costs?

A Actually, I don't remember that particular phrase. If we get the patent, I could look for it, but I don't remember that particular thing. 11:23:47

Q That's not a part of the patent that you cited in your declaration?

A It may be a part of the patent. I don't remember those particular words. 11:23:57

Q Okay. Is it your opinion that Uber uses the inventions claimed in the '190 patent?

A It's my opinion that Uber uses [redacted] and that [redacted] is claimed in the '190 patent. 11:24:42

Q Okay. So turning to a different topic, your declaration does not offer any opinions about how long it would take a group of engineers to develop a particular LiDAR system; is that fair? 11:25:45

A That is fair. 11:26:05

Q And you didn't offer opinions or an analysis about how long it would take to develop a transmit block for a particular LiDAR system; is that fair?

A I would say that's fair. Of course, you can buy commercial products as well. 11:26:19

Q Right.

But developing one from scratch, you didn't offer an opinion on that?

A I did not offer an opinion on that. 11:26:26

Q And do you agree -- is it fair to say that there are a lot of design considerations that would go into developing the transmit portion of a LiDAR system that used, for example, [redacted] lasers?

A Could you state that question again? 11:26:41

Q Sure. Sorry. That was kind of a long one. Let me start over.

Do you agree that it's fair to say that there are a lot of design considerations that would go into developing the transmit portion of a LiDAR 11:26:50

system that uses, for example, 64 lasers? 11:26:54

A There certainly are design considerations for the transmit portion, as well as other portions.

Q For example, you would have to figure out which laser diodes you want to use in the first 11:27:05 place?

A Right.

Q Is that correct?

A Yes, that is.

Q And you would also have to figure out how 11:27:12 you want to distribute those laser diodes?

A Yes, you would.

Q You could do something like Velodyne with each one on an individual board, or you might do it differently, correct? 11:27:22

A That is correct.

Q And it would involve figuring out where to position the laser diodes on each printed circuit board, correct?

A Yes, it would. 11:27:35

Q And there's also -- besides the laser diodes, there's a whole set of electronics that are used to fire the laser diodes that sit behind the diodes, and you would have to develop those electronics as well, correct? 11:27:49

A Yes, you would. 11:27:50

Q And if you've got multiple boards in your system, you'd have to figure out how to connect the boards so that they can be synchronized when you're firing your lasers; is that fair? 11:28:01

A Yes, that's fair.

Q And there would also be issues like testing it to make sure that the board works for its intended purpose?

A Yes. 11:28:11

Q And we talked about it earlier. There would be testing to make sure your alignment is correct between your transmit side and your receive side of the device?

A Yes, there would. And you need to align every time, you know, whenever you use it. 11:28:22

Q Right.

A Yes.

Q You would also have to -- if you were using this for a real world application, you would have to make sure that the design is actually manufacturable? 11:28:31

A Yes, you would.

Q So can you turn to paragraph 61 of your report? This is on page 20. 11:29:18